

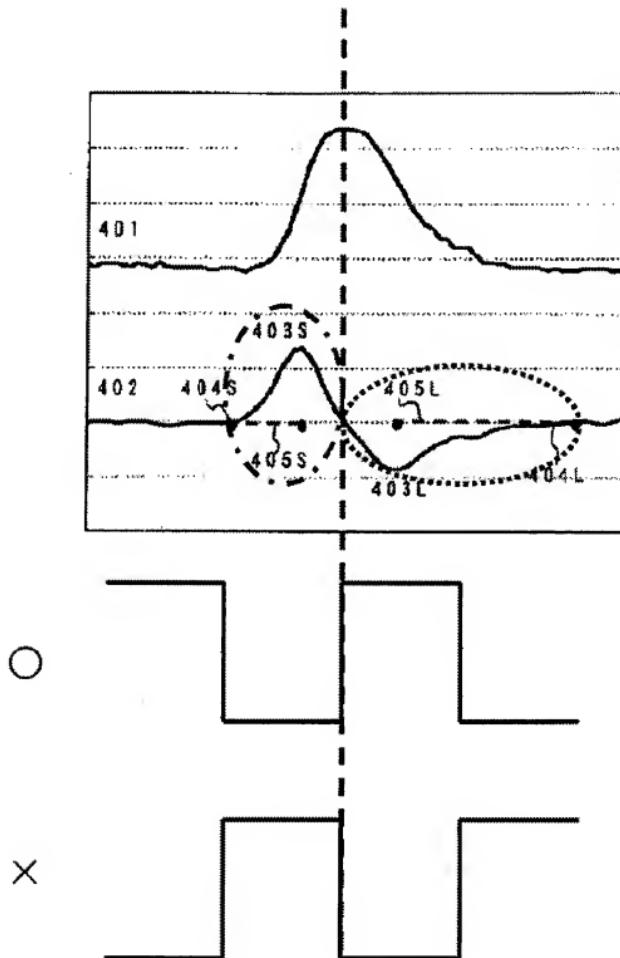
REMARKS

Claims 1-11 are currently pending in this application. Applicants respectfully request reconsideration in light of the following remarks.

Claims 1-11 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Dudley et al. (U.S. Patent No. 6,627,887) ("Dudley"). This rejection is respectfully traversed and reconsideration in respectfully requested.

According to the claimed invention, the derivative waveform profile corresponds to a single edge of a line pattern or space. As illustrated in Fig. 4 (reproduced in annotated form on the next page, for convenience), a comparison is made between the evaluation value 405S acquired from the positive peak (surrounded by the chain line in the drawing below) and the evaluation value 405L acquired from the negative peak (surrounded by the dotted line in the drawing). See, Specification, page 6, lines 6-28. The comparison of these two evaluation values provides information that makes it possible to determine which side of the edge corresponds to a concave portion (e.g., space pattern) and which side of the edge corresponds to a convex portion (e.g., line pattern).

As a result, it is possible to accurately distinguish between the concave and convex portions, as shown in the reference portion of the figure added below, for convenience of illustration. The profile of and derivative waveform of Fig. 4, correspond to the top configuration (indicated by a circle), in which the profile peak corresponds to a transition from space to line. The bottom configuration (indicated by an "X"), in which there is a transition from line to space, would not result in a profile such as that shown in Fig. 4. See, e.g., Specification, page 7, lines 6-28.



The method disclosed in Dudley, on the other hand, is only for determining structural dimensions and is not able to distinguish between a concave portion and a convex portion in a pattern. Instead, the object of Dudley is to determine whether a structure that is the measurement object meets acceptable standards by measuring the line width of such structure. However, these measurement objects are known in advance to be convex structures. In Dudley, it is important that this information is known in advance because the graph of a first derivative waveform illustrated in Fig. 3A (reproduced below for convenience) is obtained not only when measuring the structure 126 as illustrated in Fig. 2 (e.g., a convex portion) but also when measuring a structure such as that illustrated in Fig. (1) below (e.g., a concave portion).

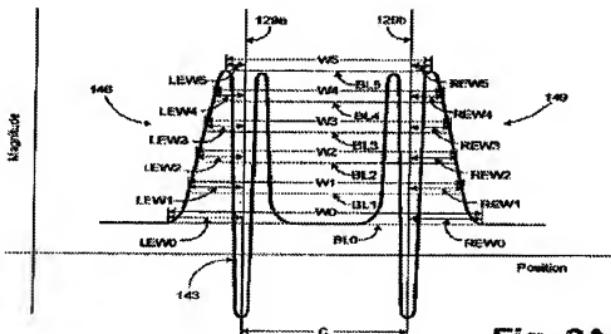


Fig. 3A

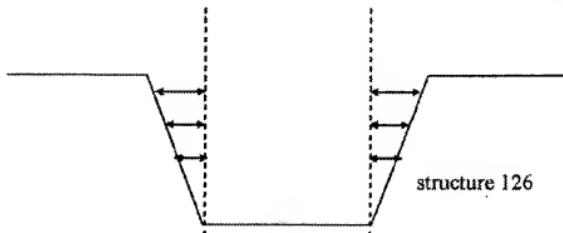


Fig. ①

The structure 126 is, as the Examiner has also indicated, measured based on the “outer” edges of the right and left positive peaks 146 and 149 respectively relative to the negative peaks defined by left and right boundary lines 129a and 129b. In other words, the measurement objects of Dudley are the left edge widths LEW0-5 (the distance between the outer edge of the left peak 146 and the left boundary 129a of the center distance C) and the right edge widths REW0-5 (the distance between the outer edge of the right peak 149 and the right boundary 129b of the center distance C). The determination method of Dudley only provides information regarding the lengths of the portions indicated by the arrows ↔ in Fig. (1). Dudley cannot, however, be used to provide information for identifying whether the structure 126 has a convex pattern or a concave pattern.

Thus, using the method of Dudley without previous knowledge regarding the shape of the structure results in the possibility that the convex structure 126 illustrated in Fig. 2 (of Dudley) could be erroneously identified as a concave structure such as the structure 126 illustrated in Fig. (1) above, or vice versa. The only reason Dudley can indicate that Fig. 3B corresponds to Fig. 3A is because the pattern of the structure 126 in Fig. 3B is known in advance as being a convex pattern.

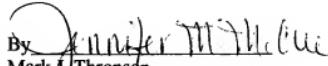
Accordingly, Dudley cannot conduct comparative judgment for distinguishing between concave and convex portions of a line/space pattern based on portions of a waveform on opposite sides of a single edge, that is, comparative judgment based on one side of the edge and the other side of the edge. Further, it should be noted that, when a sample to be measured has line *and* space patterns, a first derivative waveform obtained from such sample will not become the waveform as illustrated in Fig. 3A of Dudley.

Accordingly, a person skilled in the art would not be able to ascertain which parts of a first derivative waveform should be compared with each other for determination of concave and convex portions, based on the disclosure in Dudley. Thus, Dudley does not disclose or render obvious all features of the claimed invention. Applicants respectfully request that the rejection of claims 1-11 be withdrawn and the claims allowed.

In view of the above, Applicants believe the pending application is in condition for allowance.

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Respectfully submitted,

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